DIMETHYLDISTEARARYLAMMONIUM SALT FOR THE EXTRACTION OF MOYBDENUM IN THE PRESENCE OF THIOCYANATE

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A method is described for the spectrophotometric determination of microamounts of Molybdenum with dimethyldistearylammonium-thicyanate on the extraction of molybdenum-thiocyanate in acid medium into chloroform. The molar absorptivity at 464 nm is 1.631 \times 10^4. The extraction conditions of the metal with dimethyldistearyl ammonium chloride have been studied in details. The ions of metal, which are generally associated with the metal, do not interfere. The method has been accurately applied to the determination of molybdenum in alloy steels and in multivitamine tablets.

ANALYTICAL RAMAN SPECTROSCOPY

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Raman spectroscopy has been applied in structural and qualitative analysis but quantitative analysis has not kept pace with those applications. FT-Raman spectroscopy achieves high precision in frequency and increased S/N ratio due to multiplex measurement. Excitation at 1064 nm overcomes problems of fluorescence and thermal decomposition traditionally related to dispersive techniques. The ability to analyze the structure of drug substances in aqueous environments, the capability to sample through glass or plastic packages and the increased sensitivity to symmetric stretches and highly polarizable bands renders Raman spectroscopy a powerful analytical technique. Novel FT-Raman methods for the quantitative analysis of fenthion, diazinon, methyl-parathion, ciprofloxacin and acyclovir will be presented and evaluated in the analysis of their formulations. The developed methods for pesticides and pharmaceutics offer several advantages:

- Low analysis time: 30 s are sufficient for acquiring a spectrum region convenient for quantitative analysis
- Good agreement with time consuming official methods
- Simplicity: Minimally trained personnel can perform the analyses
- Increased safety: Samples were analyzed "as received" avoiding pre-treatment of toxic samples
- Long term calibration stability: By using external standards
• **Non-Destructive analysis:** Pills are analyzed without dissolution
• **Non-Invasive analysis:** Pills are analyzed through their PVC-blister package. The developed methods can be applied to on-line, real-time monitoring of production lines

**Literature**

   Simplified presentation: [http://www.aua.gr/georgiou/page82.html](http://www.aua.gr/georgiou/page82.html)
   Simplified presentation: [http://www.aua.gr/georgiou/page83.html](http://www.aua.gr/georgiou/page83.html)

**PREDICTIVE MICROBIOLOGICAL METHOD TO ESTABLISH THE SHELF LIFE OF PASTEURISED MILK**

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The present study tried to establish the shelf life of pasteurised milk based on a mathematical model that integrates two other models cited by the technical literature.

One model that is of “square root” type takes into account the fact that spoilage microorganisms, excepting endospore-forming bacteria, are destroyed during pasteurisation, and is able to predict *Bacillus cereus* growth at low temperatures (0 – 12°C):

\[
\sqrt{\mu_{\text{max}}} = 0,0354 T
\]

where: \( \mu_{\text{max}} \) is the maximum specific growth rate (h\(^{-1}\)) and \( T \) is the storage temperature (°C).

The other one is the well known exponential model used to estimate the microbial growth:

\[
\mu = \frac{\log N - \log N_0}{\log e(t - \lambda)}
\]

where: \( N_0 \) is the initial number of *Bacillus cereus*, \( N \) is the number of *Bacillus cereus* at time \( t \) and \( \lambda \) is the latency time.

The model able to estimate the shelf life (t) of pasteurised milk, expressed in days, assumes that there is no lag phase for *Bacillus cereus* growing in pasteurised milk, admits that